Amstrad

SRX320
SRD510 / SRD520
SATELLITE RECEIVERS

SERVICE MANUAL

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Amstrad reserves the right to supply selective components

SRX320 TECHNICAL SPECIFICATION

Receiver

Dimensions	:	335 x 250 x 62mm
Weight	:	1.8Kg
Mains Supply SRX320	:	220-230V AC 50Hz
Mains Supply SRD510/520	:	240V AC 50Hz
Tuning Frequency Range	:	950 to 1700MHz
Channel Bandwidth	:	27MHz
Fine Tuning Range	:	±10MHz
Dynamic Range	:	-30 to -60dBm
Threshold	:	8dB carrier to noise (with threshold extension)
RF Output	:	Channel 38 (607.25MHz) Adjustable from channel 32 (559.25MHz) to channel 40 (623.25MHz)
Audio	:	Stereo DNR
Audio sub-Carrier	:	5.5 to 8.5MHz
Output Level	:	2V pk-pk at 50kHz input deviation
Frequency Response	:	40Hz to 15kHz
RF sub-carrier SRX320	:	5.5MHz (PAL G)
RF sub-carrier SRD510/520	:	6.0MHz (PAL I)
Input, output connectors	:	LNB IN 75 ohms F-type RF IN 75 ohms coaxial RF OUT 75 ohms coaxial AUDIO OUT RCA phono pair TC SCART/PERITEL 21-way DECODER 21-way

LNB

Input Frequency Range	:	10.95 to 11.70GHz
Local Oscillation	:	10GHz
Gain	:	53dB
Noise Figure	:	1dB Typical
Polarisation Switching	:	Electrical (13/17V)
Output Connector	:	75 ohms F-type

SAFETY TESTS

Please note: when any work is completed on this unit, the following safety tests must be completed to ensure continued electrical safety.

1. **Flash test from the mains lead with live and neutral joined together to all accessible external metal points at 4kV.**
2. **Meggertest at 400V DC from tha mains lead with live and neutral joined together to all accessible metal points. The reading must not fall below 2 Mohms.**

NB. Ensure the on/off switch is switched on when both these tests are carried out.

In keeping with our policy of continually improving our service, and the technical quality of our products, we reserve the right to change component types, manufacturers, sources of supply or technical specification at any time

AMSTRAD PLC
BRENTWOOD HOUSE, 169 KINGS ROAD, BRENTWOOD, ESSEX CM14 4EF.

ALIGNMENT INSTRUCTIONS

A). Adjust RV600 PSU to set 5V -50mV +100mV.

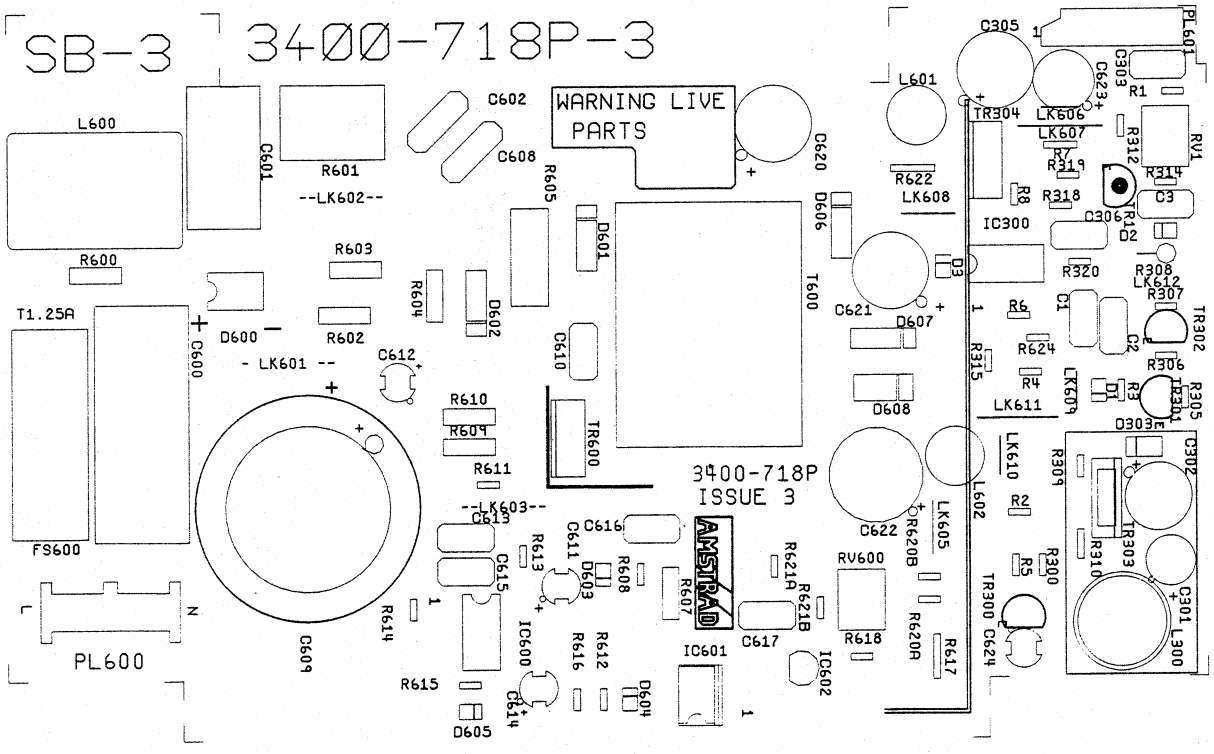
B). Adjust RV1 PSU to set:
LNB Vertical 12.8-13.4V DC.
LNB Horizontal 17.4V-18.0V DC.
*Adjustment should be made with 450mA LNB load.

C). Adjust RV1 (Main PCB) to achieve 1Vpp (75Ω) ± 80mV at Pin 19 of SK2.
Note: S1 and S2 should both be set to Norm. for Astra.

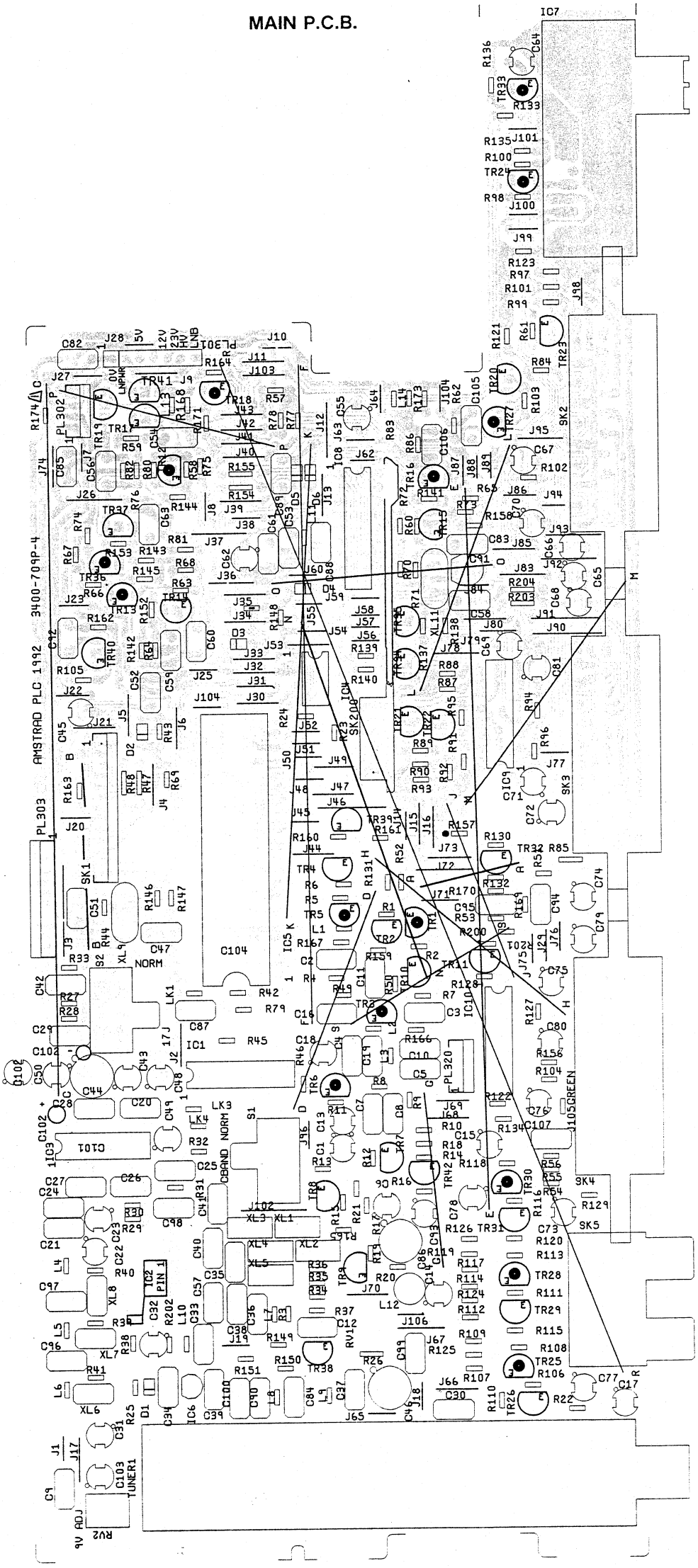
D). Adjust 9V RV2 to achieve 480MHz ± 1MHz tuner VCO (apply no RF input signal).

E). Adjust C91 to achieve 17.734475MHz ± 200Hz, accounting for probe loading.

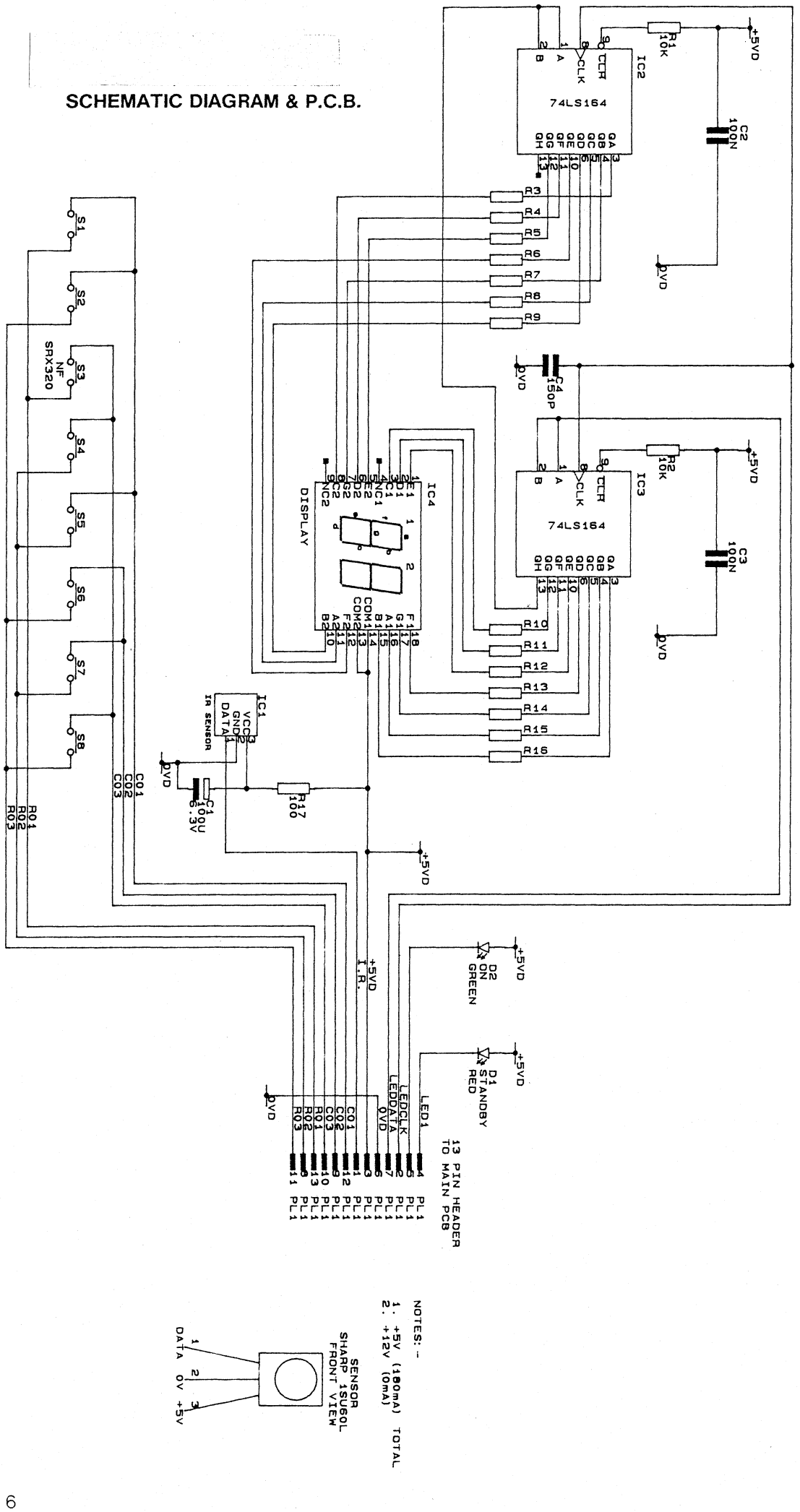
POWER P.C.B.

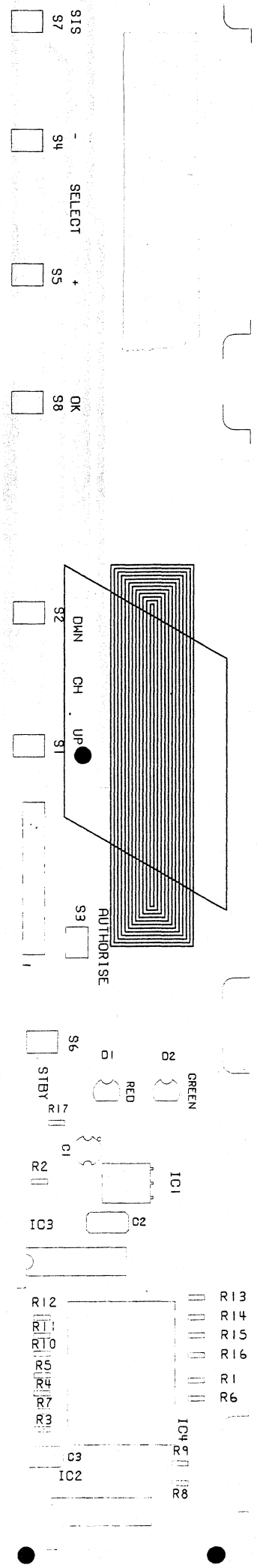


MAIN P.C.B.

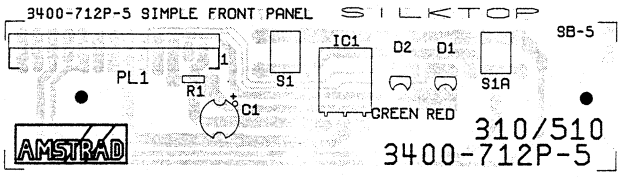

AMSTRAD PLC 1992
3400-709P-4
PL303
PL302
PL301
IC7
IC1
IC2
IC3
IC4
IC5
IC8
IC9
IC10
SK1
SK2
SK3
SK4
SK5
TUNER1
NORM
GREEN

SCHEMATIC DIAGRAM & P.C.B.





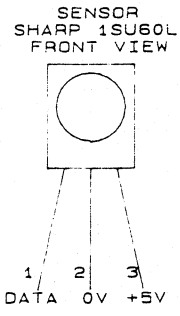
SRD510 FRONT P.C.B.

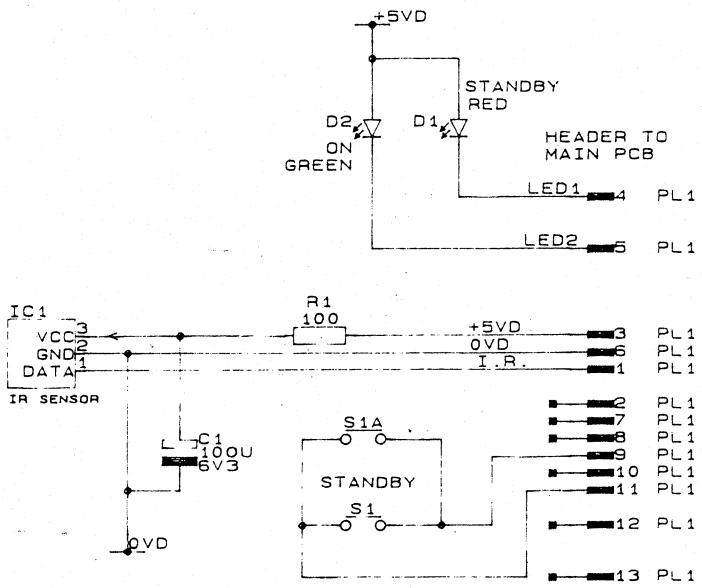


SRD510 FRONT SCHEMATIC DIAGRAM

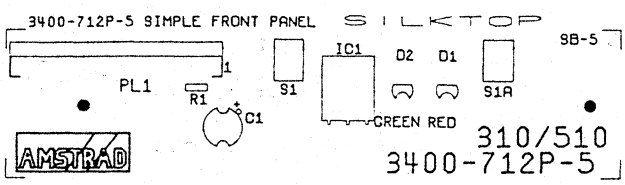
NOTES: -

1. +5V (180mA) TOTAL
2. +12V (0mA)





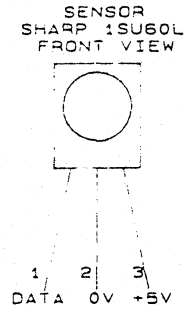
SRD510 FRONT P.C.B.

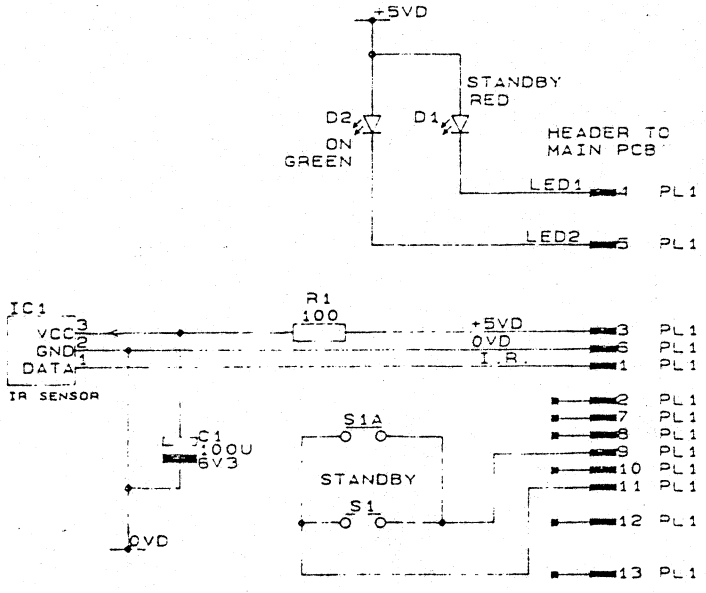


SRD510 FRONT SCHEMATIC DIAGRAM

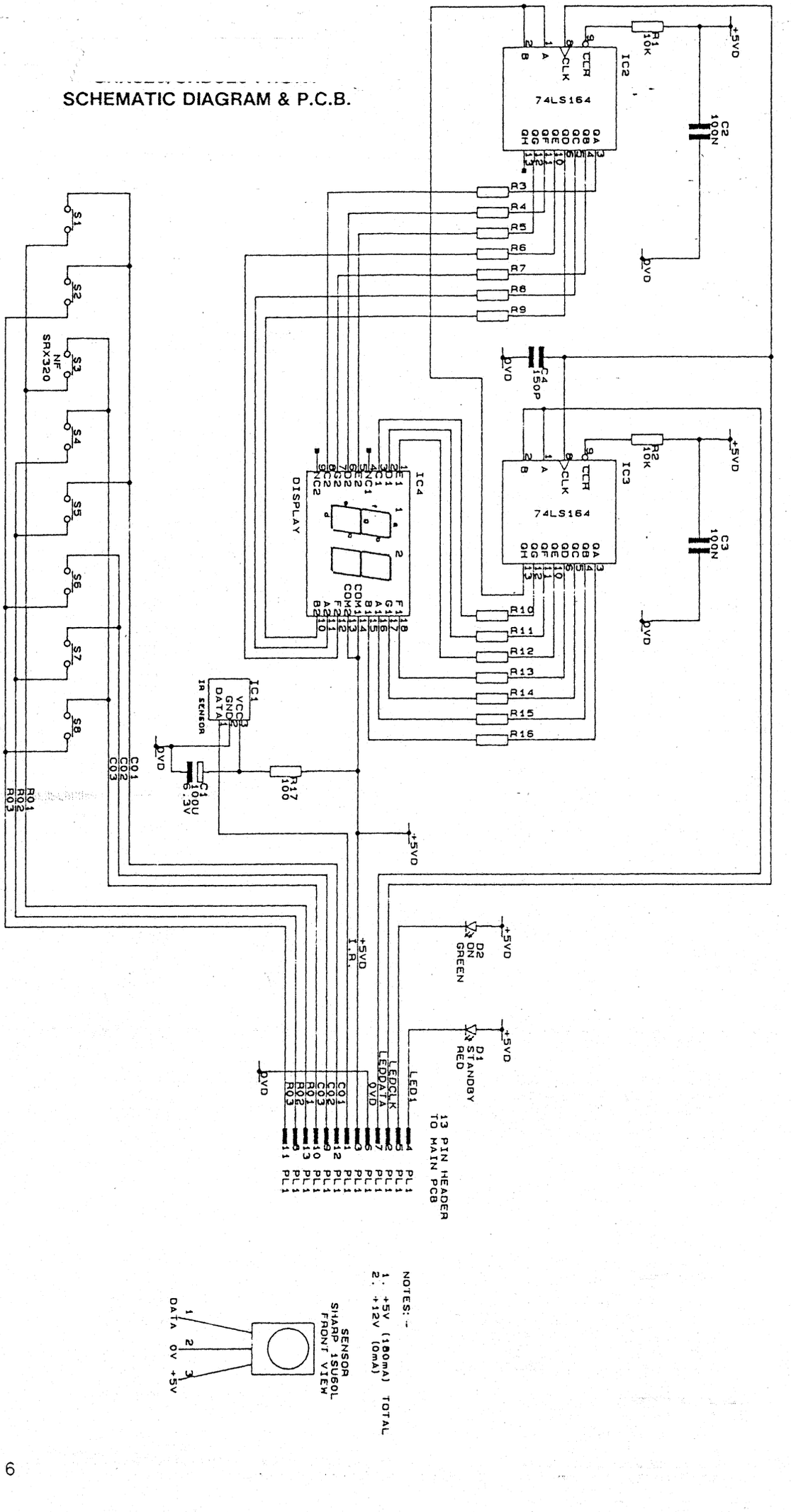
NOTES: -

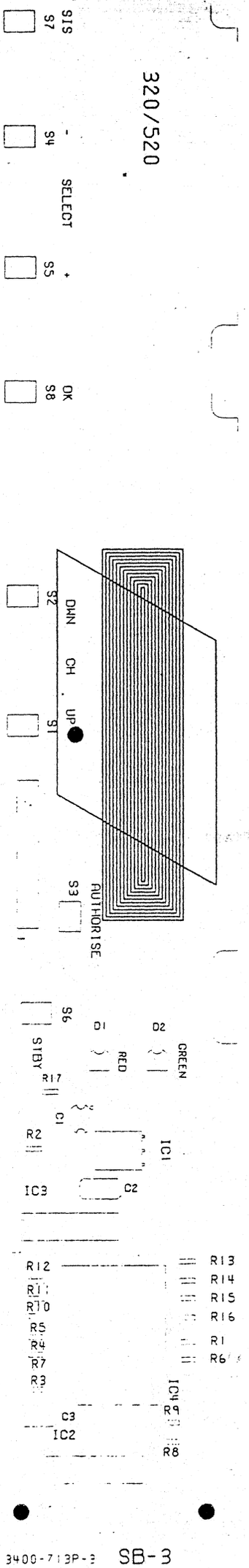
1. +5V (180mA) TOTAL
2. +12V (0mA)



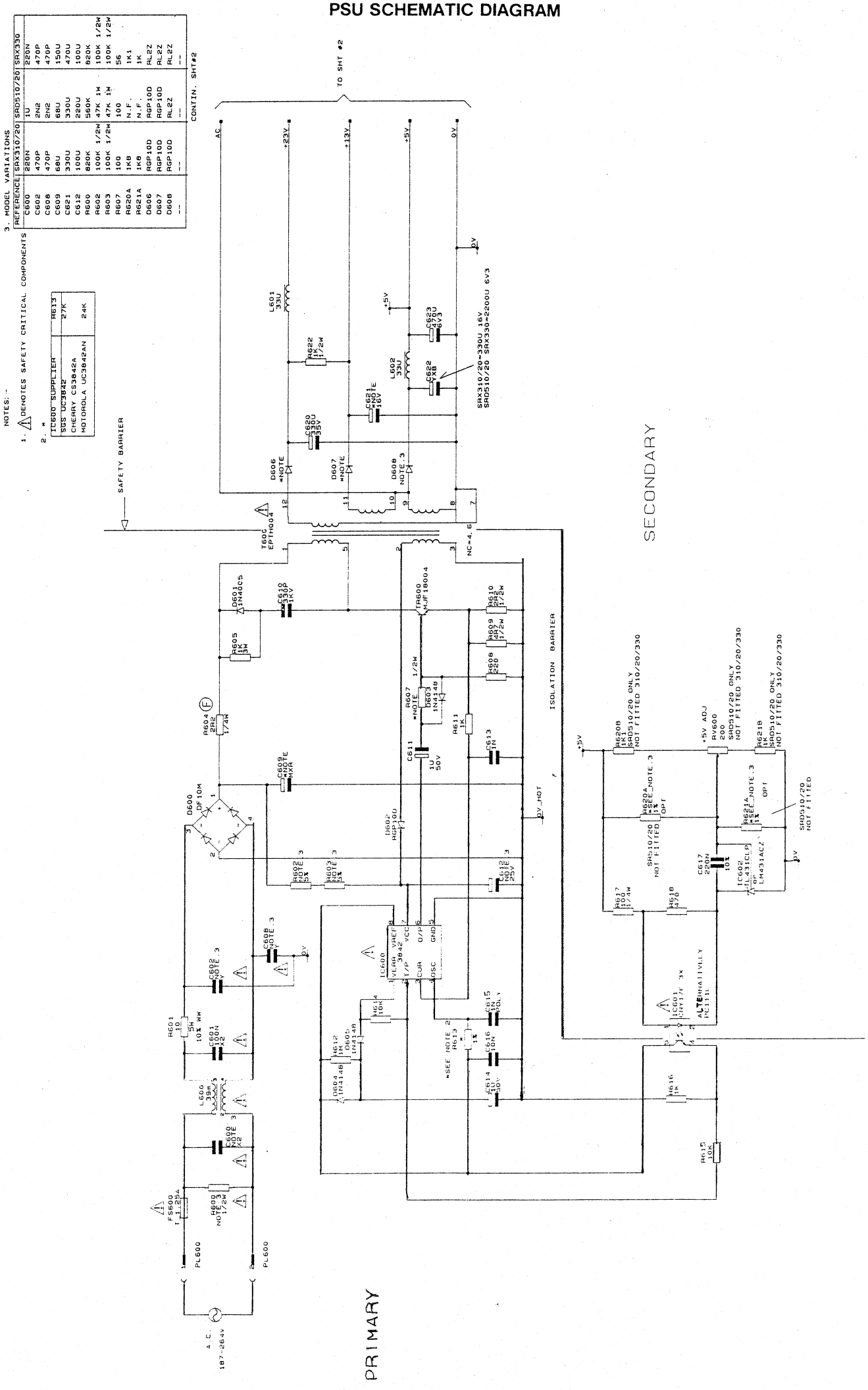


SCHEMATIC DIAGRAM & P.C.B.

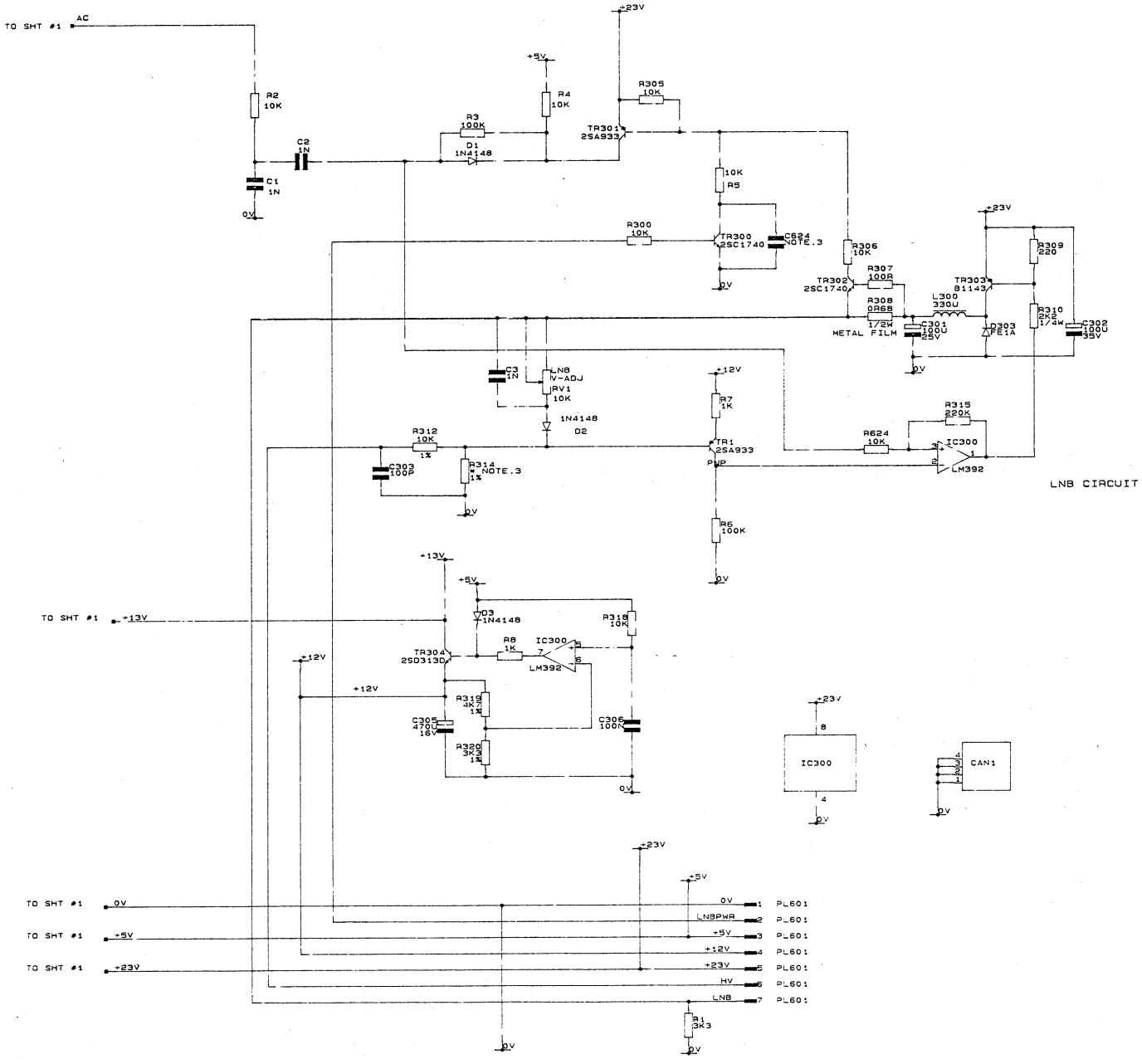




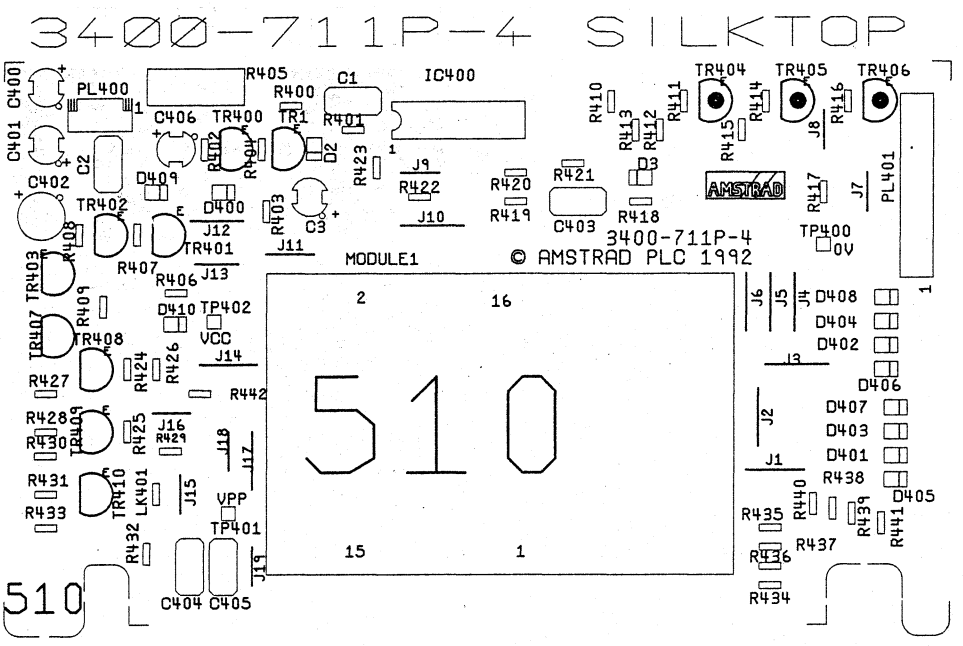
PSU SCHEMATIC DIAGRAM



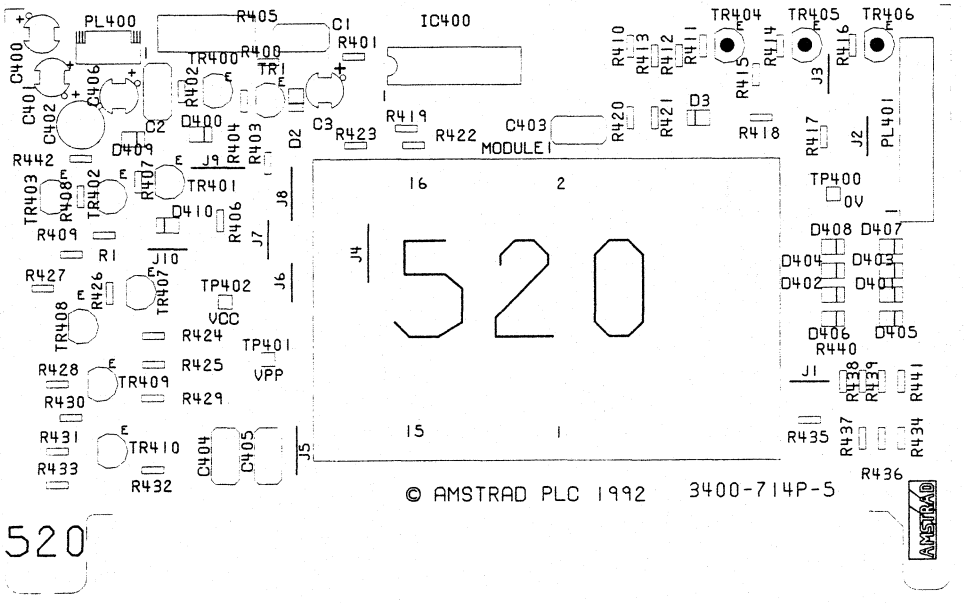
L.N.B. PSU SCHEMATIC DIAGRAM



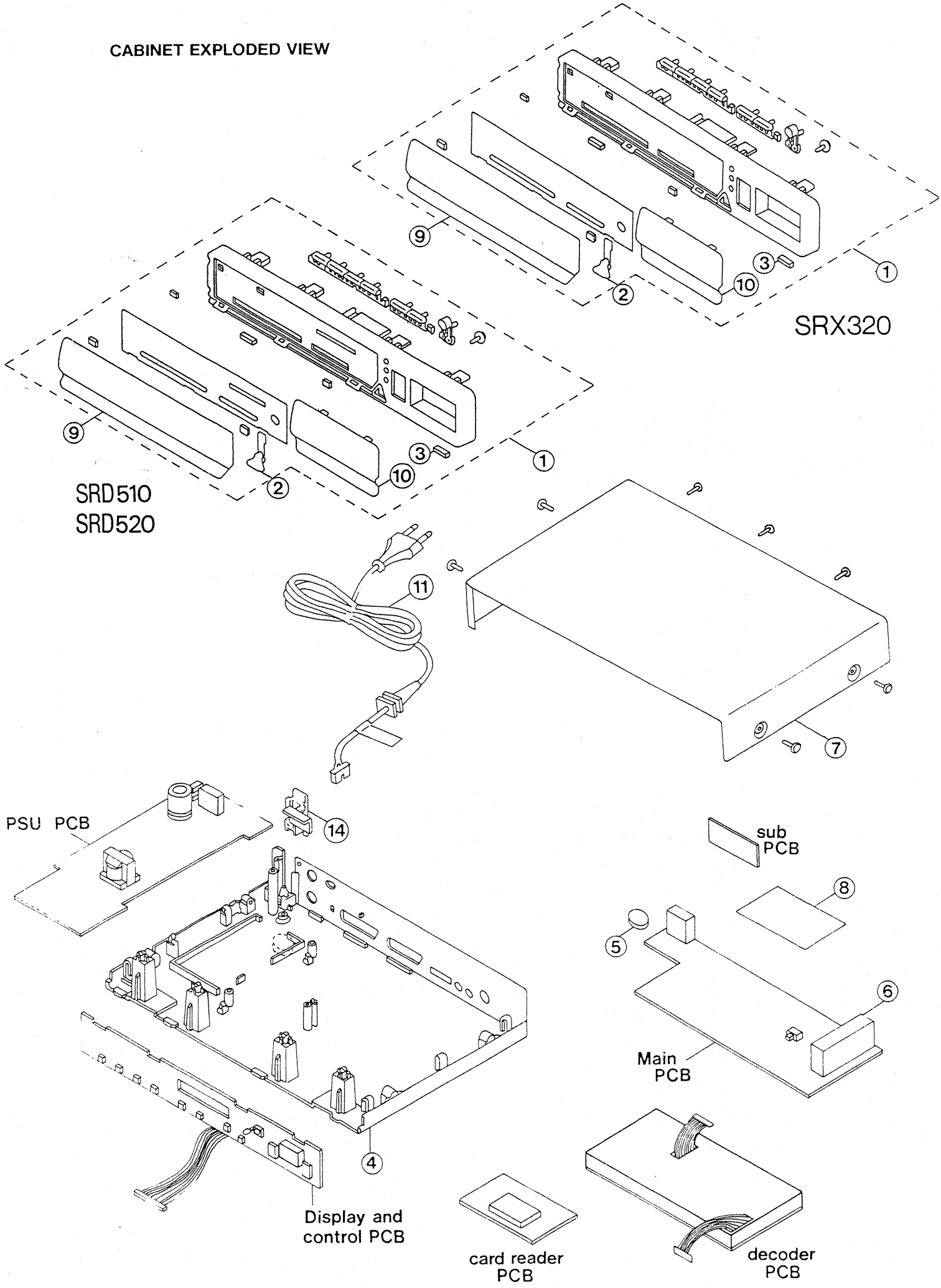
SRD510 CARD READER P.C.B.



SRD520 CARD READER P.C.B.



CABINET EXPLODED VIEW



MAIN VIDEO SCHEMATIC DIAGRAM

NOTES: –

1. SFE10.7MJA10-A XL3
   SFE10.52MJA10-A XL4
   SFE10.7MA19 XL5
2. 0VV=VIDEO GROUND
   0VD=DIGITAL GROUND
   0VA=AUDIO GROUND
3. +12V TOTAL 208mA
   +5V TOTAL 275mA
4. ** DENOTES MODEL DEPENDENT VALUES AS LISTED BELOW

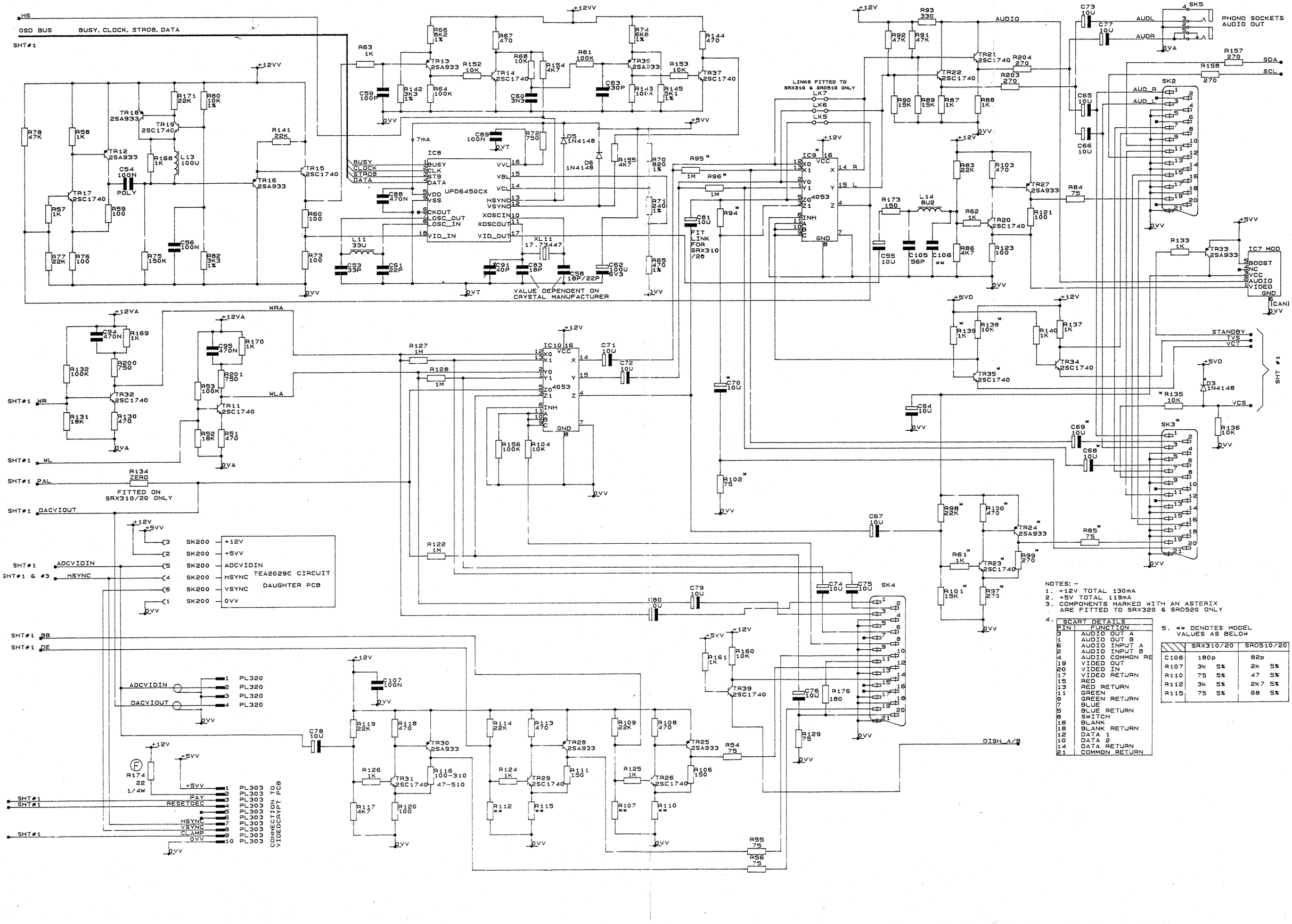
CCT REF	SRX310/320	SRD510/520
R1	470	1K
R2	22K	4K7
R4	10K	2K 1%
R5	10K	10K 1%
R7	470	470
R49	390	390
R50	220	390
R159	470K	470K

5. * DENOTES COMPONENTS FITTED TO SRX320 & SRD520 ONLY
6. *** DENOTES COMPONENTS NOT FITTED TO SRD510/520

RESONATORS SEE NOTE 1.

** SEE NOTE 4.

MAIN OUTPUT SWITCH SCHEMATIC DIAGRAM



NOTES: -

1. +12V TOTAL 130mA
2. +5V TOTAL 119mA
3. COMPONENTS MARKED WITH AN ASTERIX ARE FITTED TO SRX320 & SRD520 ONLY
4.

SCART DETAILS	
PIN	FUNCTION
3	AUDIO OUT A
1	AUDIO OUT B
6	AUDIO INPUT A
2	AUDIO INPUT B
4	AUDIO COMMON RE
19	VIDEO OUT
20	VIDEO IN
17	VIDEO RETURN
15	RED
13	RED RETURN
11	GREEN
9	GREEN RETURN
7	BLUE
5	BLUE RETURN
8	SWITCH
16	BLANK
18	BLANK RETURN
12	DATA 1
10	DATA 2
14	DATA RETURN
21	COMMON RETURN

5. ** DENOTES MODEL VALUES AS BELOW

	SRX310/20	SRD510/20
C106	180p	82p
R107	3k 5%	2k 5%
R110	75 5%	47 5%
R112	3k 5%	2k7 5%
R115	75 5%	68 5%

CABINET PARTS LIST

Ref.	Description	SRX320	SRD510	SRD520
1	Front Panel Assembly	241573	241642	241650
2	Standby Button	241645		241645
3	Foot Rubber Front	241545	241545	241545
4	Bottom Cabinet Assembly GE	241652	241566	241652
4	Bottom Cabinet Assembly FU	241653	241643	241653
5	Foot Rubber Rear	241545	241545	241545
6	Tuner Assembly 24Y90230 (V1.5)	241567	241567	241567
7	Top Cabinet	241627	241627	241627
8	Rating Label			
9	Door (Front Flap)	241574		241651
10	Display Cover			
11	Mains Lead Black	240861	240861	240861
14	Rear Insert		240741	
	Standby Button Rod			
	Button Set Lower			
	Button Set Channel			
	Door Steel Plate			
	RF Cable	153048	153048	153048
	Remote Control Handset	241568	241568	241568
	User Instructions	241576	241647	241654

ELECTRICAL PARTS LIST

Ref. No.	Description	Part No.
IC's		
IC1	IC 1S1V60L IR Sens	241529
IC1	IC ADC20010 ANADIGICS	241409
IC1, 9, 10	IC MC14053CP BU4053B Switch	152353
IC2	IC TDA6160X SMD	241395
IC2	IC SP5055S-T1	241410
IC3	IC LM1894N NS	241393
IC4	IC CAT 24C08P Eprom SDA2586	241542
IC5	IC 68HC05C9 CPU	241530
IC6	IC 78L05 Reg	250009
IC7	IC CH38 RF MOD PAL G E38LG 5V	241630
IC8	IC UPD6450CX-002	241531
IC300	IC LM392	241544
IC600	IC UC3842A	241537
IC601	IC PC111L Opto Coupler	241539
IC602	IC TL431CLP REG	241538
Transistors		
TR1, 3, 5, 6, 12, 13, 16, 18, 24, 25, 27, 28, 30, 33, 36, 301	TR 2SA933S	150874
TR2, 4, 7, 8, 10, 11, 14, 15, 17, 19, 20-23, 26, 29, 31, 32, 34, 35, 37-42, 300, 302	TR 2SC1740S	50016
TR9	TR 2SC1383	202451
TR303	TR 2SB1143T	240037
TR304	TR 2SD313D	50005
TR600	TR MJF18004	240737
Diodes		
D1	D BB609	241430
D1	LED SPL030RA RED (FP)	241631
D2-6, 603-605	D 1N4148	270754
D2	LED SPL030GA GN (FP)	241632
D303	D FE1A	241406
D600	D DF10M Bridge	241403
D601	D 1N4005	241402
D602, 606-608	D RGP10D	241633
D608	D RL2Z	240733
Coils		
L2	Coil 3.9UH	240694
L3, 9	Coil 3.3UH	240056
L4, 5	Coil 6.8UH	241634
L6, 7	Coil 10UH	240691
L10	Coil 2.2UH	241635
L11	Coil 33UH	240045
L300	Coil Choke 330UH	241636
L600	Line Filter 39UH Toroidal	241637
L601, 602	Coil 33UH	240045
Miscellaneous		
SK2, 4	Scart Socket	153030
SK5	Phono Socket Red & White	240798
S1, 2	Slide Switch SPDT	240800
S1, 1S	Tact switch F.P.	240860
RV1, 2	VRSF 500Ω Main PCB	241638
VR1	VRSF 2KΩ	241639
VR1	VRSF 10KΩ LNB SEC	240710
XL1, 3	Ceramic Filter SFE10.7MJA-10	241027
XL2, 4	Ceramic Filter SFE10.52MJA10-A	241028
XL5	Ceramic Filter SFE10.7MA19	254401
XL6, L8	Ceramic Discriminator CDA10.7MG38V	240076
XL7	Ceramic Discriminator CDA10.52MG638V	240077
XL9	Crystal 4MHz 20PPM	254427
XL11	Crystal 17.7344MHz HC49U 20PPM	241640
T600⚠	Mains Transformer LLP004TH	241572
F600⚠	Fuse T1.25A 250V	240083
FS600	Fuse Holder	
	Saw Filter B608B510	241532
TU1	Tuner RWTDM-1300	241567
	Videocrypt Decoder PCB Assy	
	Sub PCB Assy	

ADDITIONAL COMPONENTS FOR SRX320/SRD520

Listed below are components in addition to SRX510 and apply to SRX320/SRX520

Ref. No.	Description	Part No.
IC's		
IC2, 3	IC 74LS164	
IC4	7 Segment LED LB-602VA2	
IC9	IC MC14053BCP Switch Mode	240025
Transistors		
TR23, 35, 40	TR 2SC1740S	50016
TR24	TR 2SA933S	150874
Diodes		
D3	D IN4148	
Miscellaneous		
XL8	Ceramic Discriminator CDA10.7MG38V	
S2, 4-8	Tact switch 4 Pin	
	Videocrypt Decoder PCB Assy	
	Sub PCB Assy	

Description	Ref. No.	Part No.
Resistors 1/6W		
120Ω	R10	
270Ω	R3-16, 51, 97, 99, 130	
330Ω	R162	
470Ω	R65, 100	
1KΩ	R21	
2KΩ	R101	
2.2KΩ	R33	
9.1KΩ	R5	
10KΩ	R1, 2, 135, 138	
18KΩ	R52, 132	
30KΩ	R89, 90	
1MΩ	R94-96	
75Ω ¼W	R85, 102	
100Ω 1/6W F	R17	
Ceramic Capacitors		
47pF	C52	
0.022µF	C42	
Aluminium Capacitors		
10µF 16V	C32, 64, 81	
470µF 16V	C46	

Components listed below are for information only unless part numbered

Description	Ref. No.	Part No.
1/6W Carbon Resistors		
3.3Ω	R1	
27Ω	R32	
75Ω	R54-56, 84, 129	
100Ω	R22, 35, 36, 59, 76, 106, 110, 111, 115, 116, 120, 121, 123	
120Ω	R10, 50	
150Ω	R8, 14, 15	
220Ω	R21, 47, 48, 309, 608	
360Ω	R41	
390Ω	R49	
430Ω	R39, 40	
470Ω	R1, 7, 9, 60, 67, 73, 103, 108, 113, 118, 144, 618	
750Ω	R19	
820Ω	R28, 34, 37	
910Ω	R29, 30	
1KΩ	R7, 11, 12, 31, 51, 57, 58, 62, 63, 105, 124-126, 130, 133, 140, 611, 616	
1.8KΩ	R620A, 621A	
2.2KΩ	R72, 93	
2.7KΩ	R16	
3.3KΩ	R52, 82, 98, 131, 142, 320	
4.7KΩ	R20, 23, 24, 86, 107, 112, 117, 319	
5.1KΩ	R145	
6.8KΩ	R27, 74	
8.2KΩ	R66	
10KΩ	R2, 4, 5, 17, 18, 43, 68, 69, 71, 77, 80, 104, 136, 137, 300, 305, 306, 312, 318, 614, 615	
15KΩ	R33, 38, 65	
22KΩ	R2, 70, 78, 83, 109, 114, 119, 141, 613	
47KΩ	R6, 13, 25, 79, 314	
100KΩ	R3, 6, 53, 64, 81, 143	
120KΩ	R602, 603	
220KΩ	R75, 78, 315	
470KΩ	R3	
1MΩ	R45, 46, 122, 127, 128, 612	
10MΩ	R44	
¼W Carbon Resistors		
100Ω	R617	
2.2KΩ	R310	
½W Carbon Resistors		
2.2Ω	R609, 610	
100Ω	R607	
1KΩ	R622	
120KΩ	R602, 603	
820KΩ	R600	
Metal Resistors		
0.68Ω ½W	R308	
Fuse Resistors		
2.2Ω ½W	R604	272445
22Ω ¼W	R174	241293
100Ω 1/6W	R1(FP), 307	240873
Wire Wound Resistors		
10Ω 3W	R601	241404
1KΩ 3W	R605	241641
Ceramic Capacitors		
10pF	C51, 97	
22pF	C4, 46, 47, 52, 58, 61	
33pF	C53	
47pF	C20, 29	
56pF	C7	
82pF	C19, 38	
100pF	C4, 59, 303	
150pF	C4	
200pF	C3, 10	
330pF	C63, 610	
470pF⚠	C602, 608	
0.001µF	C1, 2, 8, 26, 34, 613	
0.0033µF	C27, 28, 42, 60	
0.01µF	C33, 35, 40, 616	
0.082µF	C21, 24	
0.1µF	C2, 12, 16, 25, 32, 56, 82, 306	
Aluminium Capacitors		
1µF	C43, 611, 614	
10µF 16V	C1, 6, 13-15, 22, 23, 41, 45, 48-50, 55, 65, 66, 71-81	
10µF 35V	C17	
100µF 16V	C18, 44, 62	
470µF 16V	C305	
Poly Capacitors		
0.001µF	C615	
0.1µF 50V	C11, 54	
0.22µF	C617	
Electrolytic Capacitors		
47µF 25V	C612	
68µF 400V	C609	
100µF 6.3V	C1 (FP)	
100µF 25V	C301	
100µF 35V	C302	
220µF 6.3V	C622	
330µF 16V	C621	
330µF 35V	C620	
470µF 6.3V	C623	
Metal Film Capacitors		
0.1µF	C601	
0.47µF	C600	